Spatial Interpolation Methodology

Small Area population estimates are based on a process of spatial interpolation referred to as areal interpolation or proportional allocation.

Populations from established geographic areas, in this case Federal Census Blocks (2000), are overlaid or 'unioned' with special area boundaries using a Geographic Information System (GIS). When the boundaries overlap, the GIS calculates the percentage of each census block that is inside and outside of the special area boundary. This ratio, based on total area, is used to allocate population data from the census block to the special area.

Using the map below as an example, Department of Revenue (DOR) Fire District boundaries were unioned with 2000 census blocks. The GIS calculated 80 percent of the area of block 4088 fell into the unprotected area and 20 percent into Stevens County Fire District #8. Population estimates are derived using that same proportion, 80 percent of the blocks total population is allocated to the unprotected area and 20 percent to district #8. After populations from all census blocks have been allocated, full block and partial block estimates within the special area boundary are aggregated yielding a final total population estimate for the fire district.

This methodology makes the assumption that population is evenly distributed throughout each census block. When populations are highly concentrated within census blocks this assumption fails and erroneous results may occur.